



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/518,722	12/21/2004	Hiroataka Miyazaki	1858-44	1224
23117 7590 03/12/2007 NIXON & VANDERHYE, PC 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203			EXAMINER ZEMEL, IRINA SOPJIA	
			ART UNIT	PAPER NUMBER
			1711	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		03/12/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/518,722

Applicant(s)

MIYAZAKI, HIROTAKE

Examiner

Irina S. Zemel

Art Unit

1711

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 June 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119.

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>7/28/05; 2/7/06</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over any one of US Patent 3,253,967 to Blakey et al., (hereinafter "Blakey"), US Patent 4,473,665 to Martini-Vvedensky, et al., (hereinafter "Martivni"), DE 1282971 to Celanese Corp., (hereinafter "Celanese") in combination with of US Patents 5158986 to Cha et al., (hereinafter "Cha" or US Patent 5997781 to Nishigawa et al., (hereinafter "Nishigawa") and further in view of either one of JP 7-126481 to Polyplastics, Co., (hereinafter "Polyplastics '481", of record) or JP7-90161 to Polyplastics, KK., (hereinafter "Polyplastics '161").

Each one of the primary references, Blakey, Martini, Celanese, discloses foamed articles made from resin composition in which a polyacetal copolymer resin (A) with a fluid (B) in a supercritical state as a foaming agent via various processes. While not specifically disclosing a process of injection molding articles, this process is notoriously known in the art and is suitable for wide variety of polymers, including polyacetals, as evident from the disclosures of Nishikawa or Cha disclosing foams obtained by injection molding process of various polymers (including polyacetals) comprising the steps of injection-molding a resin composition in which a polyacetal

Art Unit: 1711

copolymer resin (A) with a fluid (B) in a supercritical state as a foaming agent using a mold made of conventional materials. Thus, injection molding of polyacetals in foamed articles is considered known in the art as evidence from combined teaching of the cited references.

Although none of the primary reference expressly disclose copolymers of polymethylene with higher oxyalkylenes, such as oxyethylene or as suitable materials, the primary references do not disclose the specifically claimed polyacetal with the claimed crystallization times. However, polyacetals with the claimed crystallization times are known in the art as evident from the disclosure of either one of Polyplastics '481 or Polyplastics '161. Both of those references disclose advantages of using the high crystallization temperature polyacetals for molded articles in order to obtain moldings with improved surface characteristics and other improved properties such as tensile strength, elongation and thermal stability. While it is noted that the specification provides evidence of improvement of physical properties of foams obtained from the claimed polyacetal, as compared with polyacetals with lower crystallization temperatures, the improved result, such as surface properties and improved mechanical properties, seemed to have been expected from improvements achieved molded articles disclosed in both Polyplastics references.

The invention as claimed, thus, is considered to have been obvious from the disclosure of the cited references.

Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over any one of US Patent 3,253,967 to Blakey et al., (hereinafter "Blakey"), US Patent

Art Unit: 1711

4,473,665 to Martini-Vvedensky, et al., (hereinafter "Martivni"), DE 1282971 to Celanese Corp., (hereinafter "Celanese") in combination with of US Patents 5158986 to Cha et al., (hereinafter "Cha" or US Patent 5997781 to Nishigawa et al., (hereinafter "Nishigawa") and further in in view of either one of JP 7-126481 to Polyplastics, Co., (hereinagter "Polyplastics '481", of record) or JP7-90161 ro Polyplastics, KK., (hereiafter "Polyplastics '161") and further in view of JP 2000-71277 to Asahi Kasei, (hereinafter "Asahi").

The disclosure of the Blakey, Martini, Celanese, Cha, Nishigawa, Polyplastics '481 and Polyplastics '161 is discussed above. While the injection molding of polyacetals of specified properties is considered to have been obvious as discussed above, none of the references expressly addresses the properties of the molds used for injection molding of polyacetals. However, using surface modified molds in which the inner surface is coated with a material of low conductivity is known in the art as disclosed by Asahi in order to obtain foamed articles of improved surface properties. Thus, the invention as claimed in claims 6 and 7 would have been further obvious in view of teaching of Asahi and coating of molds disclosed in, for example, Cha amd Nishikawa with low conductivity materials would have been obvious to improve surface characteristics of the final foamed product..

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Irina S. Zemel whose telephone number is (571)272-0577. The examiner can normally be reached on Monday-Friday 9-5.

Art Unit: 1711

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on (571)272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Irina S. Zemel
Primary Examiner
Art Unit 1711



ISZ